THE BURDEN OF SNAKEBITE AND SNAKEBITE ENVENOMING IN UGANDA: A COMMUNITY SURVEY AND FACILITY AUDIT

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**SUMMARY REPORT**

1. **Background and methods**

Snakebite envenoming is a medical emergency, if left untreated it can result in permanent disability, disfigurement, or even death. Worldwide, 2.7 million people are bitten by snakes and 125,000 die of snakebites annually, with the majority of these events in Sub-Saharan Africa and Asia. In 2018, Uganda integrated snakebite envenoming into the country’s NTD program and drafted the first national snakebite prevention and management strategy. However, implementation of the strategy is hampered by the critical gaps with the absence of country data on snakebites. Successful management of snakebites requires information of the snakes, snakebite characteristics and correct knowledge of management. This study aimed at determining the burden of snakebites, snakes involved, characteristics of the bites, community knowledge and practices, and health facility capacity to manage snakebites. This cross-sectional study which was conducted in July and August 2020, employed parallel convergence mixed methods for data collection. Data were collected from 1080 household heads, 41 Key Informants, and records review from 29 health facilities across six districts (Arua, Gulu, Kamuli, Kasese, Nakapiripirit, and Mubende). Data were collected on cases of snakebite, types of snakes, knowledge and practices on management of snakebites, availability of medical supplies and personnel for management of snakebite victims. Fact-checking interviews were conducted with snake-handling experts to validate findings. Quantitative data were collected using electronic devices and un-weighted analysis was conducted using STATA version 14.1. A composite score was constructed from the sub-components of knowledge and cut off scores created based on the Blooom’s cut-off point knowledge score to categorize overall knowledge. Qualitative data were imported to and analysed in Nvivo 12 qualitative software.

1. **Summary Findings**

***Incidence of snakebites:*** Out of 1080 households enrolled in the study, 341(31.6%) had had a case of snakebite. Among the 6600 members in the 1080 households, 441(6.7%) had ever been bitten by a snake. We found 365(82.8%) of the snakebites had occurred more than 12 months ago, 56(12.7%) occurred within the last 12 months, and 20(4.5%) of the victims were not certain of the exact period when it had occurred. The 12 months incidence of snakebites from the household survey data was 101 bites per 100,000 population. The results from health facility data revealed that for the period January to December, 2019 out of the 736580 patients who attended the 29 health facilities in the 12 months, 536 (72/100,000 population) were cases of snakebites. The health facilities in Gulu and Nakapiripirit districts with 104 snakebites per 100,000 population, followed by Arua districts with 84 snakebites per 100,000 population had relatively higher snakebites in 2019 compared to facilities in other districts.

***Snake types and Characteristics of snakebites:*** A wide range of both venomous and non-venomous snakes were reported present in the six study districts. The venomous snakes reported included Black forest cobra, Egyptian cobra, Black necked spitting cobra, Puff adder, Black mamba, Gaboon viper, Rhinoceros viper, Blandy tree snake, spotted bush snake, and Vine tree/Twing snake. The non-venomous included Rock Python, House snake, Blind snake, and Battersby. Individuals are frequently bitten by snakes while walking in the footpath (26.5%), at home inside the house (25.4%), at home outdoors (20.4%), and while in the garden (17.2%). Most bites occur at night (58.3%) and the majority (56.5%) of the victims did not see the snake after they were bitten. Women were disproportionately affected by snakebites (53.3%) and persons involved in agriculture (72.3%) as an occupation.

***Community knowledge on snakebites: -*** Overall knowledge on snakebites was inadequate among household heads, with 88.2% having low knowledge. Knowledge on First Aid for snakebites was very low, with fewer than 10% of household heads able to mention any of the recommended care. Additionally, knowledge of harmful practices was abundant; many recommended application of herbs (52.9%), application of tourniquet (48.7%), and making cuts on bite area (17.6%). However household heads know the various measures to prevention of snakebites – knowledge of clearing bushes around homes was almost universal (91%). Wearing protective shoes, clearing snake habitats in workplaces, avoiding water bodies at certain times of the day, and avoiding poking hands into holes were reported by 25-40% of the respondents.

***Community practices related with snakebites:*** There were multiple practices by the community following a snakebite, most of which may be harmful to the victim. Tying a tourniquet (79.4%), use of herbs-local or drinking (23%), and making cuts to the bite site (16%) were the most frequent practices. Other practices included use of black stone, application of bean seed or Uganda shilling 500 coin, and going to hospital immediately. We explored perceptions that may be influencing some of the harmful practices and fund that 81% of household heads believe application of a tourniquet is not harmful and it should be practiced, 55.3% believe the black stone is very effective in removing venom and 25.2% believe snakebite is due to ‘supernatural power snakes have over their victims and should be managed with traditional treatments, not in the hospital.

***Health facility capacity to manage snakebites:*** Capacity to manage snakebites was inadequate at all health facilities. None of the 29 health facilities reported having a health worker with training on management of snakebites, 59% (17/29) did not have guidelines on management of snakebite, 93% (27/29) did not have any protocol on emergency first aid for snakebites, and 97% (28/29) of the facilities did not have any IEC material on snakebite management and prevention. Anti-venom was only available in the four regional referral hospitals and the stock was reported inadequate. Basic drugs for supportive management of snakebite cases were in stock at all health facilities although steroids and non-steroidal anti-inflammatory drugs were reported to be frequently out of stock at lower level health facilities.

1. **Conclusions and Recommendations**

There is high burden of snakebites, and about similar species of venomous and non-venomous snakes are distributed across the six of 15 geographic zones in Uganda. There is inadequate knowledge on emergency first aid for snakebite and harmful practices on snakebite management are highly prevalent among community members. Health facilities have inadequate capacity to manage snakebite victims. MoH should develop and distribute guidelines and protocols on management of snakebites in Uganda, including emergency first aid care and treatment kits in hospitals. There is also need to develop and disseminate IEC materials on snakebites to communities and also health care providers – the messages should particularly address the current harmful practices related with management of snakebite victims. MOH and stakeholders should conduct in-service training for health care providers on snakebites and snakebite management, and review the supply chain management for anti-venoms and the other drugs used for supportive management snakebite victim to address the frequent stock outs of drugs and also non stocking of anti-venoms by lower level facilities which receive a relatively high numbers of snakebites as compared to regional referral facilities.